REMARKS

Applicants thank the Examiner for thoroughly reviewing the application.

Rejection of claims 1-93 under 35 U.S.C. §101

Claims 1-93 were rejected under 35 U.S.C. §101 as being directed toward non-statutory subject matter. According to the Office Action, the independent claims (1, 32, and 63) recite no clearly defined practical application, nor do they draw a conclusion as to the final end result of the claimed method.

Applicants have amended independent claims 1, 32, and 63 to specifically describe collection and measurement of data from a data signal rather than a data source. The Applicants submit that the claimed steps act upon a signal, which is a broad, yet concrete, real-world subject.

Claims 1, 32, and 63 are drawn to patentable subject matter because the claimed method/apparatus/article of manufacture produces a tangible and useful result. Section 2106 of the MPEP provides guidelines for determining whether a process claim recites statutory subject matter. A claimed process including a mathematical or other abstract idea is statutory if the claimed process is "limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible, and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible, and useful." MPEP 2106(IV)(B)(2)(b)(ii) (Eighth Edition) (citations omitted).

Signals are tangible, concrete subjects which may be usefully measured and analyzed. The claimed method/apparatus/article of manufacture manipulates data that is descriptive of a real thing - a physical signal. The claimed invention begins with data representative of a signal, and manipulates that data to arrive at additional data that is also descriptive of the signal. In so doing, it solves a real world problem, i.e., separating deterministic and random causes of signal distortion.

In short, the invention as claimed in claims 1-93 involves manipulating data relating to a tangible thing (a signal) and serves a concrete, tangible, useful purpose

(separating deterministic and random causes of signal distortion). Thus, the invention as claimed in claims 1-93 is patentable per the holding of State Street Bank & Trust. For this reason, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §101.

Applicants would like to take this opportunity to explain the real world application of the newly presented claims 94-129 in anticipation of any possible patentability concerns under 35 U.S.C. §101. A clock signal or communication signal oftentimes is composed of transitions that are to occur at ideal points in time (e.g., a "1" is to transition to a "0" at a particular point in time). However, in practice, the transition may occur either too early or too late. (Such an occurrence is referred to as "jitter.") As a result, a data error may occur. Typically, systems using such signals are analyzed (using various measurement devices) to gain an understanding of the propensity of the transitions to be too early or too late. This analysis is sometimes presented as a distribution.

Similarly, a clock signal or communication signal oftentimes is composed of transitions that must meet certain threshold amplitudes to be detected correctly as the desired signal. (e.g., a "1" may occur ideally at a give voltage such as 3.3V and be detected when within a range, such as 3.0V to 3.3V). However, in practice, the level may be temporarily undershot or overshot, despite transitioning at the correct time. (Such a temporary occurrence may be referred to as "noise", as opposed to "jitter") As a result, a data error may occur. Typically, systems using such signals are analyzed (using various measurement devices) to gain an understanding of the propensity of the transitions to be too high or low. This analysis is also sometimes presented as a distribution.

Finally, a clock signal or communication signal is often simulated to detect inherent design deficiencies such as the noise or jitter previously described. Typically, development using such models includes analysis (using various simulation scenarios) to gain an understanding of the propensity of such erroneous transitions in the actual hardware. This simulation analysis is sometimes presented as a distribution as well.

A real-world problem occurs when trying to construct the aforementioned distributions by direct measurement or simulation. Specifically, some errors occur so infrequently that it may take days to observe even a single instance of such an error (e.g., one may have to wait 3 days to observe a transition occurring .5 ns too early), or may not occur at all in a software model of the system. Obviously, it is not practical to construct the distribution needed to analyze the system if one must wait long periods of time to observe infrequent errors. It is clearly inefficient to spend, for example, over one hundred dollars in time and effort to thoroughly test a chip that would sell for a dollar.

Claims 94-105 have been added to illustrate that an application of the invention is directed toward "measuring jitter within a signal." By following the recited steps in claim 94, for example, unknown parameters for deterministic and random models are found. One skilled in the art understands that with knowledge of these parameters, a total jitter distribution can be arrived at—a feat that takes days if attempted by direct measurement, as opposed to implementation of the method described in claim 94. Thus, this is the practical application to which the method/apparatus/article of manufacture of claims 94-105 are put.

Claims 106-117 have been added to illustrate that an application of the invention is directed toward "measuring noise within a signal." By following the recited steps in claim 106, for example, unknown parameters for deterministic and random models are found. One skilled in the art understands that with knowledge of these parameters, a total noise distribution can be arrived at—a feat that takes days if attempted by direct measurement, as opposed to implementation of the method described in claim 106. Thus, this is the practical application to which the method/apparatus/article of manufacture of claims 106-117 are put.

Claims 118-129 have been added to illustrate that an application of the invention is directed toward "***receiving reference data and a data record that is descriptive of a signal.***" By following the recited steps in claim 118, for example, unknown parameters for deterministic and random models are found. One skilled in the art understands that with knowledge of these parameters, a total signal variation distribution can be arrived

at—a feat that may not be possible through traditional signal simulation, as opposed to implementation of the method described in claim 118. Thus, this is the practical and concrete application to which the method/apparatus/article of manufacture of claims 118-129 are put.

Rejection of Claims 1-5, 8, 9, 32-36, 39, 40, 63-67, 70 and 71 Under 35 U.S.C. §102(e)

Claims 1-5, 8, 9, 32-36, 39, 40, 63-67, 70 and 71 were rejected under 35 U.S.C. §102(e) as being anticipated by United States Publication 2003/0004664 (Ward). Applicants respectfully traverse this rejection.

According to the Office Action, Ward teaches each and every element of the independent claims. Applicants point out that the independent claims have been amended to require a deconvoloution process that is employed upon probability density functions. However one might characterize the process employed by Ward[1], it is most certainly not employed upon probability density functions, as required by the independent claims.

Applicants assert that Ward teaches a method of separating deterministic and random jitter components from a total jitter time train. This can be seen from the fact that Ward begins its analysis based upon a jitter function in the time domain (See step 1, Fig. 5 of Ward). In short, the process taught by Ward is employed upon a time-domain data series, not upon two or more probability density functions, as required by the independent claims as amended.

Because Ward fails to teach employeing a deconvolution process upon probability density functions, Ward cannot serve as a proper basis for rejection of claims 1-5, 8, 9, 32-36, 39, 40, 63-67, 70 and 71 under 35 U.S.C. §102(e). Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-5, 8, 9, 32-36, 39, 40, 63-67, 70 and 71 under 35 U.S.C. §102(e).

Rejections Under 35 U.S.C. §103(a)

[1] Applicants reserve the right to argue that Ward fails to teach a deconvolution process at all.

The remaining claims have been rejected under 35 U.S.C. §103(a). Applicants point out that the premise underlying the rejection of these claims is that Ward actually teaches employing a deconvolution process upon probability density functions. As has been discussed, this is not the case. Applicants further point out that neither Skafidas, Martone, nor Dinsel teaches or suggests such an element.

To make out a *prima facie* case of obviousness under 35 U.S.C. § 103(a), there must exist some motivation, either generally available to one of ordinary skill in the art or expressly stated in the prior art, to modify the known prior art to arrive at the claimed invention. No motivation has been stated to modify Ward (or Skafidas, Martone, or Dinsel) to include employing a deconvolution process upon probability density functions. Further, no such motivation is articulated within any of those references themselves. Thus, Ward, Skafidas, Martone, and Dinsel are unable to support a rejection, either alone or in concert, under 35 U.S.C. §103(a). For the foregoing reason, Applicants respectfully request that the Examiner withdraw the rejection of the remaining claims under 35 U.S.C. §103(a).

Conclusion

Claims 1-93 remain pending in the application. These claims are believed to be allowable for the reasons set forth above. Claims 94-129 have been added, and described to be within the scope of the current invention. This amendment is believed to be responsive to all points raised in the Office Action. Accordingly, Applicants respectfully request prompt reconsideration, allowance, and passage of the application to issue. Should the Examiner have any remaining questions or concerns, the Examiner is urged to contact the undersigned by telephone at the number below to expeditiously resolve such concerns.

Respectfully submitted,

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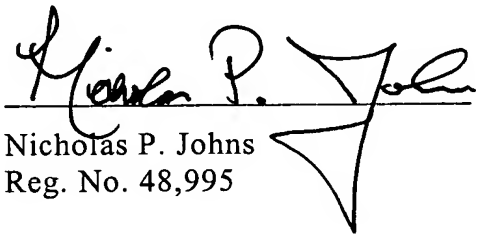

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